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- > Appeal Brief Transmittal
- > BRIEF ON APPEAL
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PATENT
Docket No. PD-200108**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Ying J. Fera, et al.

Date: January 31, 2006

Serial No.: 09/661,967

Filed: September 14, 2000

For: STRATOSPHERIC-BASED COMMUNICATION SYSTEM
HAVING INTERFERENCE REJECTION CANCELLATION

Group Art Unit: 2686

Examiner: Nghi H. Ly

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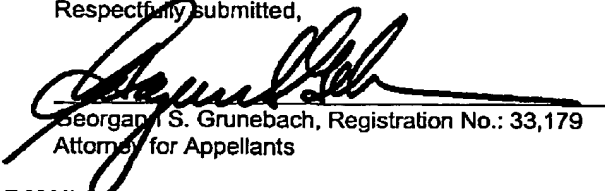
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X Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

X The Appeal Brief Fee of \$ 500.00 is due.

X The total fee due is \$500.00. Please charge this amount to Deposit Account No. 50-0383 of The DIRECTV Group, Inc. (formally Hughes Electronics Corporation), El Segundo, California. If any additional appeal brief fee or extension fee is required, please charge to Deposit Account No. 50-0383.

Respectfully submitted,


Georgann S. Grunebach, Registration No.: 33,179
Attorney for Appellants**CERTIFICATE OF MAILING UNDER 37 CFR 1.8**

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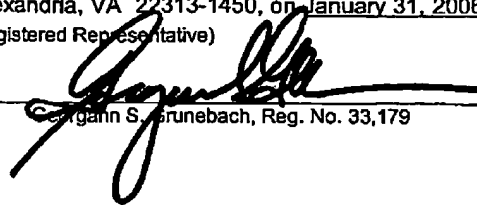
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Customer Number 020991

Patent
PD-200108**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Application of:

Ying Feria

Serial No. 09/661,967

Group Art Unit: 2686

Filed: 09/14/2000

Examiner: Nghi H. Ly

For: STRATOSPHERIC-BASED COMMUNICATION SYSTEM HAVING
INTERFERENCE REJECTION CANCELLATION**BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal filed on
December 7, 2005 for the above-identified application.

02/01/2006 NNGUYEN1 00000070 500383 09661967

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I. Real Party in Interest

The real party in interest in this matter is The DIRECTV Group, Inc of El Segundo, California which is 34 percent owned by Fox Entertainment Group, which is approximately 82 percent owned by The News Corporation, Limited.

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1-24 stand rejected in the Final Office Action.

IV. Status of Amendments

There have been no Amendments filed after the final rejection.

V. Summary of Claimed Subject Matter

Claim 1 is directed to a communication system (10) that is generally illustrated in figure 1 and is described on pages 5-7. The communication system (10) includes a stratospheric platform (18) having a payload controller and a phased array antenna having a plurality of elements for generating a first beam and a second beam. A gateway station (20) in communication with said stratospheric platform (18) receives a first signal having a first beam having interference from the second beam therein and a second signal having a second beam having interference from the first beam therein. As is best shown in Figure 3 and the corresponding text on pages 9-10, the gateway station (20) includes a first subtracting block (74) for subtracting the second signal from the first signal to obtain the first beam and a second subtracting block (76) for subtracting the first signal from the second signal to obtain a second beam. One point to note is that only two signals are received to form two beams. This is in contrast to the prior art, especially that present in the *Mesecher* reference as will be described below.

Claim 2 is dependent upon Claim 1 and recites that the gateway station weights the second signal with the first weight prior to subtracting the second signal from the first signal, which is illustrated in Figure 3.

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Claim 3 depends upon Claim 1 and recites that the gateway station weights the first signal with the second weight prior to subtracting the second signal from the first signal as is shown in Figure 3.

Claim 4 depends from Claim 2 and recites that the first weight is a function of user position files.

Claim 5 depends from Claim 1 and recites that the payload controller of Figure 1 comprises a demultiplexer for receiving control signals.

Claim 6 is dependent from Claim 5 and recites that the demultiplexer generates a plurality of element control signals as is best shown in Figure 2.

Claim 7 is dependent from Claim 6 and recites that the element control signals are coupled to an RF feed and the RF feed is coupled to the plurality of elements of the phased array antenna. The RF feeds are generally illustrated as 56 in Figure 2.

Claim 8 is dependent upon Claim 1 and recites that the gateway station comprises a beam generator for generating beam signals. The beam generator is generally illustrated as 42 of Figure 2.

Claim 9 depends from Claim 1 and recites that the gateway station further comprises a multiplexer/demultiplexer. The multiplexer/demultiplexer is illustrated as 44 of Figure 2.

Claim 10 depends from Claim 9 and recites that the multiplexer/demultiplexer 44 comprises a code division multiplexer.

Claim 11 is dependent upon Claim 1 and recites that the gateway station is coupled to a terrestrial network illustrated in Figure 2.

Claim 12 is dependent upon Claim 11 and recites that the terrestrial network comprises the Internet.

Claim 13 depends from Claim 11 and recites that the terrestrial network comprises a public service telephone network.

Claim 14 is an independent claim directed to a method of controlling a communication system 10 having a stratospheric platform. Figure 3 generally illustrates

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the method for performing the method. Claim 14 recites receiving a first signal having first beam interference from a second beam therein at a gateway station. Claim 14 also recites receiving a second signal having a second beam having interference from the first beam therein at the gateway station. Claim 14 further recites the step of subtracting the second signal from the first signal to obtain the first beam and subtracting the first signal from the second signal to obtain the second beam.

Claim 15 depends from Claim 14 and recites that prior to the steps of receiving, generating the first beam and the second beam using the payload controller and the phase array antenna having a plurality of elements therefore. Claim 15 further recites that prior to the step of subtracting said second signal from the first signal, weighting the second signal with the first weight and prior to the step of subtracting the first signal from the second signal weighting the first signal with the second weight.

Claim 16 depends from Claim 15 and recites performing the step of subtracting the second signal from the first signal to obtain the first beam in a first subtracting block in the gateway station and performing the step of subtracting the first signal from the second signal to obtain the second beam in a second subtracting block in the gateway station.

Claim 17 depends from Claim 15 and recites that the first weight and the second weight are a function of user position files.

Claim 18 is another independent claim and recites the steps of receiving the first signal having a first beam having interference from a second beam therein, receiving a second signal from the second beam having interference from the first beam therein at the gateway station, weighting the first signal with the first weight to provide a weighted first signal, weighting the second signal with the second weight to provide a weighted second signal, subtracting the second weighted signal from the first signal to obtain the first beam and subtracting the weighted signal from the second signal to obtain the second beam.

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Claim 19 is dependent upon Claim 18 and recites the first weight and the second weight are a function of user position files.

Claim 20 is an independent claim and recites a method of canceling interference at the gateway station that includes receiving a plurality of signals from each of the plurality of users. The at least one of the plurality of signals has interference therein from at least one other of the plurality of signals. Claim 20 further recites determining an amount of interference from the user position file and canceling the interference in at least one of the plurality of signals by subtracting at least one other of the plurality of signals.

Claim 21 depends upon Claim 20 and recites that prior to the step of canceling the at least one other of the plurality of signals is weighted.

Claim 22 depends upon Claim 21 and recites that one signal is associated with a mobile user.

Claim 23 depends from Claim 22 and recites that one of the other of the plurality of signals is associated with a mobile user.

Claim 24 depends from Claim 3 and recites that the second weight is a function of user position files.

VI. Grounds of Rejection to be Reviewed on Appeal

The following issues are presented in this appeal:

Whether Claims 1, 8-14 and 20 are obvious under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Dalal* (6,819,943).

Whether Claims 5-7 are obvious under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Dalal* (6,819,943) and *Rouffet* (5,410,731).

Whether Claims 2-4, 15-17 and 21-24 are obvious under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Dalal* (6,819,943) further in view of *Meier* (6,519,477).

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Whether Claims 18-19 are obvious under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Meier* (6,519,477) further in view of *Dalal* (6,819,943).

VII. Argument

The Rejection of Claims 1, 8-14 and 20 under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Dalal* (6,819,943)

Claim 1

The *Ibanez-Meier* reference teaches stratospheric platforms and satellites at various altitude levels. A user may receive signals from two different sources. The system relies on spatial diversity to prevent interference. As the *Ibanez-Meier* reference implies, when two signal sources become colinear or near colinear, interference between the signals may result in unacceptable signal degradation. As stated beginning in Col. 16, line 61, signal degradation may be remedied by ceasing to communicate over one of the links in which degradation is present or switching to another link. This highlights the spatial diversity aspect for resolving interference. No teaching or suggestion is provided for subtracting signals as in the present invention.

The *Dalal* reference is cited for teaching a first subtracting block and a second subtracting block. The Examiner points to Col. 14, lines 20-25, and Fig. 8 box 856a. The *Dalal* reference is specifically directed to a transmitter and not a receiver in a gateway station. Applicants therefore respectfully request the Examiner to reconsider this rejection as well since the *Dalal* reference does not teach a gateway station that is in communication with a stratospheric platform. The *Dalal* reference also does not teach that the gateway station receives a first signal having a first beam having interference from the second beam therein and receiving a second signal having the second beam having interference from the first beam therein wherein the gateway station has a first subtracting block and a second subtracting block for subtracting the second signal from the first signal and the first signal from the second signal, respectively. Applicants therefore respectfully request the Examiner to reconsider the rejection of Claim 1.

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In response to these arguments, the Examiner cites the *Dalal* reference, Col. 14, lines 20-25, canceller 800, and Fig. 8, box 865a, for teaching subtracting signals as in the present claims. Applicants have reviewed these portions and maintain that the *Dalal* reference teaches only a transmitter and not a receiver. In fact, the Applicants respectfully request the Examiner to review Col. 14 and the first half of Col. 15, which describes the cancellation. This section is entitled "Transmit Interference Cancellation." This is entirely different than the receiver interference cancellation claimed in the present application. It is believed that the *Dalal* reference does not take into consideration the transmission of the signals. That is, a precompensation signal is formed in the transmitter so that the compensation may affect the ultimate reception of the signals. The present invention waits until the signals have been received in order to compensate for interference. The effects of movement of the transmitter and/or receivers may thus be taken into consideration and the weights of the present invention may be so chosen. Page 10, lines 15 through 18, describe the positioning of the beams that may be taken into consideration. Applicants recognize that this is not recited in Claim 1 but is a consideration why transmitting is not the same as receiving as set forth in the *Dalal* reference.

Also, on page 12 of the Final Office Action, the Examiner states that *Dalal* teaches communication with a stratospheric platform in Fig. 3. Applicants can find no teaching in the description of Fig. 3 for the proposition of a stratospheric platform. The Examiner again refers to Col. 14, lines 20-25, for canceller 800 and boxes 856a, 856b, and Fig. 8 for the gateway station receiving a first signal having a first beam having a first interference from the second beam therein and receiving a second signal having a second beam therein, the second beam having interference from the first beam therein wherein the gateway station has a first subtracting block and a second subtracting block for subtracting the second signal from the first signal and the first signal from the second signal, respectively. As mentioned above, Applicants respectfully submit that this portion of the *Dalal* reference is for transmitter interference cancellation. No teaching or

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suggestion is provided in these passages for anything more than transmitter interference cancellation and not receiver interference cancellation.

In response to the above arguments the Examiner then points to Figure 6 and Col. 15, lines 35-50. The specific section deals with an outdoor unit and does not refer to a gateway station. Further, although the passages from lines 42-50 describe coherently subtracting interference from other symbol streams, no teaching or suggestion is provided for the specific way in which interference is removed as set forth in Claim 1. Appellants therefore respectfully request the Board to reverse the Examiner's position with respect to Claim 1.

Claim 8

Claim 8 recites that the gateway station comprises a beam generator for generating beam signals. The beam generator in combination with the elements of Claim 1 are not taught or suggested in the combination of references.

Claim 9

Claim 9 recites that the gateway station comprises a multiplexer/demultiplexer. The combination of Claim 9 with Claim 1 is not taught or suggested in the combination of references.

Claim 10

Claim 10 depends from Claim 9 and recites that the multiplexer/demultiplexer comprises a code division multiplexer/demultiplexer. This in combination with the elements of Claim 1 are not taught or suggested in the combination of references.

Claim 11

Claim 11 recites that the gateway station is coupled to a terrestrial network. This in combination with the recitations of Claim 1 are not taught or suggested in the combination of references.

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Claim 12

Claim 12 depends from Claim 11 and recites that the terrestrial network comprises an Internet. This in combination with the recitations of Claim 1 are not taught or suggested in the combination of references.

Claim 13

Claim 13 recites that the terrestrial network comprises a public service telephone network. The combination of Claims 12 and 13 ultimately with Claim 11 are not taught or suggested in the combination of references.

Claim 14

Independent claim 14 is similar to that of claim 1 in method form. Claim 14 recites the steps of subtracting said second signal from said first signal to obtain the first beam; and subtracting said first signal from said second signal to obtain the second beam. Claim 14 is allowable for the same reasons set forth with respect to Claim 1.

Claims 20

Claim 20 is an independent claim directed to a method of canceling interference at a gateway station. Claim 20 recites, "plurality of signals" from a plurality of users. As discussed in the specification, for example on page 10, because the signals are all received at the gateway station, the amount of interference can be determined from the relative positions of the beams from the user position files within the gateway station. Based on the positions of the beams, interference levels may be determined for cancellation purposes. Thus, since the user signals all arrive at the gateway, signal processing can be very efficiently used for interference cancellation at the gateway. These aspects are neither suggested nor shown by *Ibanez-Meier* and *Dalal* whether they are considered singly or in combination.

It should also be noted that the specifics of the present invention are very suitable for a gateway station. The beams are the received beams from a stratospheric platform. The beams may be geographically separated, but still may contain interference from other beams. The signals when all returned to the gateway station may be used to obtain better

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signals without such things as a separate directional antenna. In the case of the present invention, a directional antenna at the stratospheric platform, for example, would increase the weight and thus increase the cost of the system. Therefore, modifying *Dalal* to form the present invention is not obvious as the Examiner suggests. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 20 as well.

Whether Claims 5-7 are obvious under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Dalal* (6,819,943) and *Rouffet* (5,410,731).

Claim 5

Claim 5 is believed to be independently patentable since the payload controller comprises a demultiplexer for receiving control signals. This element, in combination with that of Claim 1 is not taught or suggested in the combination of the references. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 5.

Claim 6

Claim 6 depends upon Claim 5 and recites that the demultiplexer generates a plurality of control signals. This in combination with the recitations of Claim 1 are not taught or suggested in the references. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 6.

Claim 7

Claim 7 depends from Claim 6 and recites that the element control signals are coupled to an RF feed which is coupled to elements of the phased array antenna. This in combination with the recitations of Claim 1 are not taught or suggested in the references. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 7.

The rejection of Claims 2-4, 15-17 and 21-24 under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Dalal* (6,819,943) further in view of *Baier* (6,519,477).

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Claim 2

Claim 2 is believed to be independently patentable since the combination of references does not teach weighting a second signal with the first weight prior to subtracting the second signal from the first signal. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 2.

Claim 3

Claim 3 is also believed to be independently patentable for the similar reasons set forth with respect to Claim 2 in that weighting is claimed. That is, weighting the first signal with a second weight prior to subtracting the second signal from the first signal is described. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 3.

Claim 4

Claim 4 is believed to be independently patentable since Claim 4 recites that the first weight is a function of user position files. The combination of references does not teach that the first weight is a function of user position files. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 4.

Claim 15

Claim 15 depends from Claim 14 and is believed to be allowable for the same reasons set forth above with respect to Claims 2 and 3 since Claim 15 also recites the weighting of the signals. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 15.

Claim 16

Claim 16 recites the specific recitations of performing the subtracting in a gateway station. This is not taught or suggested in the combination of references. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 16.

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Claim 17

Claim 17 recites that the first weight and the second weight are a function of user position files. This in combination with Claims 15 and 14 is not taught or suggested in the combination of references set forth by the Examiner. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 17.

Claim 21

Claim 21 depends from independent Claim 20 and recites that the signals are weighted. This is similar to Claims 2 and 3 above and is believed to be allowable for the same reasons set forth therein. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 21.

Claim 22

Claim 22 recites that one of the signals is associated with a mobile user. Although mobile users are illustrated in the references, no teaching or suggestion is provided in the combination of references for the recitations of Claims 21 and 20. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 22.

Claim 23

Claim 23 depends upon Claim 22 and recites that the other of the plurality of signals is associated with a mobile user. This also is not taught or suggested as discussed above with respect to Claim 22. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to Claim 23.

Claim 24

Claim 24 depends from Claim 3 and recites that the second weight is a function of user position files. The lack of a teaching of user position files is mentioned above with respect to Claims 19 and 17. Appellants believe that this claim is also allowable for the same reasons with respect to those claims.

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The rejection of Claims 18-19 under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Baier* (6,519,477) further in view of *Dalal* (6,819,943).

Claim 18

Claim 18 is an independent method claim also having similar limitations to those of Claim 14. Claim 18 also recites weighting the first signal with the first weight to provide a weighted first signal and weighting the second signal with a second weight to provide a weighted second signal. Claim 18 further includes subtracting the weighted second signal from the first signal to obtain the first beam and subtracting the weighted second signal from the second signal to obtain the second beam. Appellants agree with the Examiner that the *Ibanez-Meier* reference does not teach weighting. The Examiner points to Figure 5, weights w1, w2, w3, and w4 of the *Baier* reference for teaching interference cancellation. Both intersymbol interference and multiple access interference is corrected for. However, no teaching or suggestion is provided for using the weights in a way set forth in Claim 18 as mentioned above. The Examiner appears to be picking and choosing elements from the various references and trying to combine them for the elements of the present claim. Appellants therefore respectfully request the Board to reverse the Examiner's position with respect to Claim 18.

Claim 19

Claim 19 depends from Claim 18 and recites the first weight and second weight as a function of user position files. The Examiner points to Col. 8, lines 57-67, for the weights being a function of user position files. The use of user position files is not specifically mentioned in this passage. Therefore, the recitations of Claim 19 in combination with the recitations of Claim 18 are not taught or suggested in the combination of references set forth by the Examiner. Appellants therefore respectfully request the Board to reverse the Examiner's position with respect to Claim 19 as well.

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VIII. Claims Appendix

A copy of each of the claims involved in this appeal, namely Claims 1-24 is attached as a Claims Appendix.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

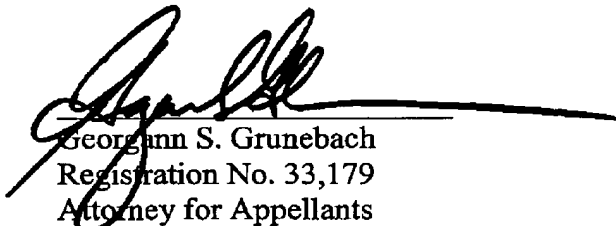
None.

XI. Conclusion

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to The DIRECTV Group, Inc. deposit account 50-0383.

Respectfully submitted,



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Date: January 31, 2006

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CLAIMS APPENDIX

1. A communications system comprising:
stratospheric platform having a payload controller and a phased array antenna having a plurality of elements for generating a first beam and a second beam;
a gateway station in communication with said stratospheric platform, said gateway station receiving a first signal having the first beam having interference from the second beam therein and receiving a second signal having the second beam having interference from the first beam therein,
said gateway station comprising a first subtracting block for subtracting said second signal from said first signal to obtain the first beam;
said gateway station comprising a second subtracting block for subtracting said first signal from said second signal to obtain the second beam.
2. A communications system as recited in claim 1 wherein said gateway station weights said second signal with a first weight prior to subtracting said second signal from said first signal.
3. A communications system as recited in claim 1 wherein said gateway station weights said first signal with a second weight prior to subtracting said second signal from said first signal.
4. A communications system as recited in claim 2 wherein said first weight is a function of user position files.
5. A communications system as recited in claim 1, wherein the payload controller comprises a demultiplexer for receiving control signals.

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6. A communications system as recited in claim 5, wherein the demultiplexer generates a plurality of element control signals.

7. A communications system as recited in claim 6, wherein the element control signals are coupled to an RF feed, and the RF feed is coupled to said plurality of elements of said phased array antenna.

8. A communications system as recited in claim 1, wherein the gateway station comprises a beam generator for generating beam signals.

9. A communications system as recited in claim 1, wherein said gateway station further comprises a multiplexer/demultiplexer.

10. A communications system as recited in claim 9, wherein said multiplexer/demultiplexer comprises a code division multiplexer/demultiplexer.

11. A communications system as recited in claim 1, wherein said gateway station is coupled to a terrestrial network.

12. A system as recited in claim 11, wherein said terrestrial network comprises an Internet.

13. A system as recited in claim 11, wherein the terrestrial network comprises a public service telephone network.

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14. A method of controlling a communications system having a stratospheric platform, said method comprising the steps of:

receiving a first signal having a first beam having interference from a second beam therein at a gateway station;

receiving a second signal having a second beam having interference from the first beam therein at the gateway station,

subtracting said second signal from said first signal to obtain the first beam;

and

subtracting said first signal from said second signal to obtain the second beam.

15. A method as recited in claim 14, further comprising, prior to the steps of receiving, generating the first beam and the second beam using a payload controller and a phased array antenna having a plurality of elements therefore, and wherein prior to the step of subtracting said second signal from the first signal; weighting the second signal with a first weight, and prior to the step of subtracting said first signal from said second signal, weighting the first signal with a second weight.

16. A method as recited in claim 15, further comprising:

performing said step of subtracting said second signal from said first signal to obtain the first beam in a first subtracting block in the gateway station; and

performing said step of subtracting said first signal from said second signal to obtain the second beam in a second subtracting block in the gateway station.

17. A method as recited in claim 15 wherein said first weight and said second weight are a function of user position files.

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18. A method of controlling a communications system having a stratospheric platform, said method comprising the steps of:

receiving a first signal having a first beam having interference from a second beam therein at a gateway station;

receiving a second signal having the second beam having interference from the first beam therein at the gateway station,

weighting said first signal with a first weight to provide a weighted first signal;

weighting said second signal with a second weight to provide a weighted second signal;

subtracting said weighted second signal from said first signal to obtain the first beam; and

subtracting said weighted second signal from said second signal to obtain the second beam.

19. A method as recited in claim 18 wherein said first weight and said second weight are a function of user position files.

20. In a communication system having a gateway station for processing signals to and from a plurality of users, a method of canceling interference at the gateway station, comprising:

receiving a plurality of signals, each from one of the plurality of users, at least one of said plurality of signals having interference therein from at least one other of said plurality of signals;

determining an amount of interference from user position files;

canceling the interference in said at least one of said plurality of signals by subtracting said at least one other of said plurality of signals.

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21. A method as recited in claim 20, wherein, prior to the step of canceling, said at least one other of said plurality of signals is weighted.

22. A method as recited in claim 21, wherein said at least one signal is associated with a mobile user.

23. A method as recited in claim 22, wherein said at least one other of said plurality of signals is associated with a mobile user.

24. A communications system as recited in claim 23, wherein said second weight is a function of user position files.